

CLAIMS:

Marked up

1. A method of processing a mineral composition comprising a refractory material the method comprising milling the composition to a particle size of  $P_{80}$  of less than 25 microns and leaching said composition with a solution comprising lime and/or limestone in the presence of an oxygen containing gas.

2. The method of claim 1, wherein the refractory material is selected from the group comprising an iron containing sulfide ore, a refinery slime, a carbonaceous ore, a selenide and a telluride.

3. The method of claim 1, wherein the refractory material is selected from the group consisting of pyrite, marcasite, arsenopyrite, troilite, pyrrhotite stibnite, tetrahedrite, argentopyrite, calaverite, altaite, gold bearing selenides, tennantite and pentlandite.

4. The method of claim <sup>3</sup>, where~~in~~<sup>i</sup> the refractory material is pyrite or arsenopyrite.

5. The method of claim 2, wherein the material is leached at atmospheric pressure.

6. The method of claim 5 wherein the material is leached in an open tank reactor.

7. The method of claim 2, wherein the material is leached at a temperature of about 50°C up to about the boiling point of the solution.

8. The method of claim 5, wherein the oxygen containing gas is oxygen and the oxygen is introduced into the leaching solution to a level of between about 200 to about 1000kg/tonne of solids in the leaching solution.